STATE OF COLORADO

CLASS SERIES DESCRIPTION
May 1, 1994

APPLICATIONS PROGRAMMER

H2A1IX TO H2A6XX

DESCRIPTION OF OCCUPATIONAL WORK

This class series uses six levels in the Professional Services Occupational Group and describes applications programming work. Work of positions in this class series involves the designing, coding, testing, debugging, maintaining, and documenting programs from detailed specifications.

Positions perform a variety of tasks such as, converting system specifications into programs by designing logic patterns; coding logic patterns into proper language and instructions which are fed into and stored in a computer and enable a computer to carry out specific tasks; testing programs by selecting and preparing proper test data which verifies a program's intent; debugging a program in the event of problems by locating and removing errors; ensuring programs operate effectively and as intended by interpreting computer stops, malfunctions, and other situations. Other activities include: preparing detailed documentation, operating instructions, and manuals for programs; maintaining and updating programs by making revisions and modifications as necessary; maintaining program files and records; communicating with other staff and users to resolve program intent issues, data requirements, and other programming matters; recommending standard terminology and symbology to ensure consistency in developing, maintaining, and/or interpreting programs; and reviewing programs for adherence to quality standards.

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APPLICATIONS PROGRAMMER INTERN   H2A1IX

This class describes the entry level. Work is designed to train positions for a higher level in the class series. Although tasks are similar to those of the first working level, assignments are structured and performed with direction and assistance from others. Positions carry out established work processes and operations by learning to apply and follow procedures, techniques, rules, and regulations. Once training

has been completed, the position is to be moved to the next level. Positions should not remain in this class indefinitely.

APPLICATIONS PROGRAMMER I   H2A2TX

CONCEPT OF CLASS

This class describes first-working level applications programming work. Positions are not expected to perform the full range of programming work. Because of the structure of assignments, decision making and complexity are limited to carrying out established work processes and operations or phases of the fully operational assignment by following and applying instructions, procedures, rules, and regulations. Positions at this level perform work identified above, under the Description of Occupational Work section and tasks performed at this level may be the same as the fully operational level but are performed with more direction and assistance from a higher level position and provide the experience and development necessary to function at the fully operational level.

FACTORS

Allocation must be based on meeting all of the four factors as described below.

Decision Making --The decisions regularly made are at the operational level, as described here. Within limits set by the specific applications programming process, choices involve deciding what operation is required to carry out the process. This includes determining how the operation will be completed. By nature, data needed to make decisions are numerous and variable so reasoning is needed to develop the practical course of action within the established process. Choices are within a range of specified, acceptable standards, alternatives, and technical practices. For example, a position determines the best approach to solve programming problems by gathering and analyzing information pertinent to the problem and applying the proper applications programming technique, practice, or method.

Complexity --The nature of, and need for, analysis and judgment is patterned, as described here. Positions study applications programming information to determine what it means and how it fits together in order to get practical solutions in the form of properly designed, coded, implemented, and/or maintained programs. Guidelines in the form of applications programming principles and practices exist for most situations. Judgment is needed in locating and selecting the most appropriate of these guidelines which may change for varying circumstances as the task is repeated. This selection and interpretation of guidelines involves choosing from alternatives where all are correct but one is better than another depending on the given circumstances of the situation. For example, a position selects and applies the proper programming guideline based on interpretation of the individual programming situation in order to design and/or maintain applications programs.

Purpose of Contact --Regular work contacts with others outside the supervisory chain, regardless of the method of communication, are for the purpose of detecting, discovering, exposing information, problems, violations or failures by interviewing or investigating where the issues or results of the contact are not known ahead of time. For example, a position communicates with systems personnel and users to

obtain an understanding of system specifications and user requirements in order to design a proper functioning program.

Line/Staff Authority --The direct field of influence the work of a position has on the organization is as an individual contributor. The individual contributor may serve as a resource or guide by advising others on how to use processes within a system or as a member of a collaborative problem-solving team.

APPLICATIONS PROGRAMMER II   H2A3XX

CONCEPT OF CLASS

This class describes the fully operational level applications programmer. Positions at this level are expected to exercise a higher degree of decision making and complexity than the Applications Programmer I level by functioning at the fully operational level with less direction and assistance. Work includes performing the full range of programming work identified above under the Description of Occupational Work section. The Applications Programmer II differ from the Applications Programmer I on the Decision Making and Complexity factors.

FACTORS

Allocation must be based on meeting all of the four factors as described below.

Decision Making --The decisions regularly made are at the process level, as described here. Within limits set by professional standards, the agency's available technology and resources, and applications programming objectives and regulations established by a higher management level, choices involve determining the process, including designing the set of operations used to complete applications programming assignments. The general pattern exists but must be individualized to plan the design, development, and implementation of programs to meet system specifications and user needs. This individualization requires analysis of data that is complicated. Analysis is breaking the problem or case into parts, examining these parts, and reaching conclusions that result in processes. This examination requires the application of known and established applications programming theory, principles, conceptual models, professional standards, and precedents in order to determine their relationship to the problem. For example, a position plans and determines the design of applications programs in accordance with system specifications and programming principles and practices. New processes or objectives require approval of higher management or the agency with authority and accountability for the program or system.

Complexity --The nature of, and need for, analysis and judgment is formulative, as described here. Positions evaluate the relevance and importance of applications programming theories, concepts, and principles in order to tailor them to develop a different approach or tactical plan to fit specific circumstances. While general policy, precedent, or non-specific practices exist, they are inadequate so they are relevant only through approximation or analogy. In conjunction with theories, concepts, and principles, positions use judgment and resourcefulness in tailoring the existing guidelines so they can be applied to particular circumstances and to deal with emergencies. For example, a position evaluates the

relevance of existing applications programming guidelines in order to prepare and tailor individual approaches to resolve specific programming development and/or maintenance issues.

Purpose of Contact --Regular work contacts with others outside the supervisory chain, regardless of the method of communication, are for the purpose of detecting, discovering, exposing information, problems, violations or failures by interviewing or investigating where the issues or results of the contact are not known ahead of time. For example, a position communicates with systems personnel and users to obtain an understanding of system specifications and user requirements in order to design a proper functioning program.

Line/Staff Authority --The direct field of influence the work of a position has on the organization is as an individual contributor. The individual contributor may explain work processes and train others. The individual contributor may serve as a resource or guide by advising others on how to use processes within a system or as a member of a collaborative problem-solving team. This level may include positions performing supervisory elements that do not fully meet the criteria for the next level in this factor.

APPLICATIONS PROGRAMMER III   H2A4XX

CONCEPT OF CLASS

This class describes work/project leader or staff authority positions. In addition to the work performed at the Applications Programmer II level, positions at this level function as work or project leaders as described by the Line/Staff Authority factor. Staff authorities are acknowledged by their peers and management as an authority in the application and utilization of advanced applications programming principles, practices, theories, concepts, and techniques. The Applications Programmer III differs from the Applications Programmer II on the Purpose of Contact and Line/Staff Authority factors.

FACTORS

Allocation must be based on meeting all of the four factors as described below.

Decision Making --The decisions regularly made are at the process level, as described here. Within limits set by professional standards, the agency's available technology and resources, and applications programming objectives and regulations established by a higher management level, choices involve determining the process, including designing the set of operations used to complete applications programming assignments. The general pattern exists but must be individualized to plan the design, development, and implementation of programs to meet system specifications and user needs. This individualization requires analysis of data that is complicated. Analysis is breaking the problem or case into parts, examining these parts, and reaching conclusions that result in processes. This examination requires the application of known and established applications programming theory, principles, conceptual models, professional standards, and precedents in order to determine their relationship to the problem. For example, a position plans and determines the design of applications programs in accordance with system specifications and programming principles and practices. New processes or

objectives require approval of higher management or the agency with authority and accountability for the program or system.

Complexity --The nature of, and need for, analysis and judgment is formulative, as described here. Positions evaluate the relevance and importance of applications programming theories, concepts, and principles in order to tailor them to develop a different approach or tactical plan to fit specific circumstances. While general policy, precedent, or non-specific practices exist, they are inadequate so they are relevant only through approximation or analogy. In conjunction with theories, concepts, and principles, positions use judgment and resourcefulness in tailoring the existing guidelines so they can be applied to particular circumstances and to deal with emergencies. For example, a position evaluates the relevance of existing applications programming guidelines in order to prepare and tailor individual approaches to resolve specific programming development and/or maintenance issues.

Purpose of Contact --Regular work contacts with others outside the supervisory chain, regardless of the method of communication, are for the purpose of clarifying underlying rationale, intent, and motive by educating others on unfamiliar concepts and theories. This goes beyond what has been learned in training or repeating information that is available in another format. For example, a position clarifies the intent of applications program design features with systems personnel and users to promote their understanding and ensure programs operate effectively.

Line/Staff Authority --The direct field of influence the work of a position has on the organization is as a work/project leader or staff authority. The work or project leader is partially accountable for the work product of two or more full-time equivalent positions, including timeliness, correctness, and soundness. At least one of the subordinate positions must be in the same series or at a comparable conceptual level. Typical elements of direct control over other positions by a work or project leader include assigning tasks, monitoring progress and work flow, checking the product, scheduling work, and establishing work standards. The work or project leader provides input into supervisory decisions made at higher levels, including signing leave requests and approving work hours. This level may include positions performing supervisory elements that do not fully meet the criteria for the next level in this factor.

<div align="center">**OR**</div>

The staff authority is an advanced individual contributor position who has a comprehensive level of expertise in the applications programming subject area. At the staff authority level, management has delegated the responsibility to a position to function as an advanced level in the application and use of applications programming theories, concepts, principles, techniques, tools, utilities, languages, and other guidelines. It is an essential component of the work assignment. The delegated responsibility to function as a staff authority is in lieu of supervisory or work/project leader responsibilities and a position requires either to be placed at this level. Managers, peers, and users recognize and rely on such a position to function independently and to provide guidance, direction, and instruction on the proper development and/or maintenance of applications programs and resolution of related issues; and, proper application and/or adaptation of standards, principles, concepts, techniques, protocols, and/or other guidelines related to the applications programming subject area. For example, positions resolve problems and issues regarding the effective design, development, maintenance, and/or enhancement of complex applications programs by applying and using their comprehensive knowledge.

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APPLICATIONS PROGRAMMER IV
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H2A5XX

<u>**CONCEPT OF CLASS**</u>

This class describes the first supervisory or senior authority level. Positions at this level supervise the operation of an organizational unit that consists of least three full-time equivalent positions. Senior authorities function as an acknowledged top level professional position in the subject area of applications programming as described by the Line/Staff Authority factor. The Applications Programmer IV differs from the Applications Programmer III on the Line/Staff Authority factor only.

<u>**FACTORS**</u>

Allocation must be based on meeting all of the four factors as described below.

Decision Making --The decisions regularly made are at the process level, as described here. Within limits set by professional standards, the agency's available technology and resources, and applications programming objectives and regulations established by a higher management level, choices involve determining the process, including designing the set of operations used to conduct and complete applications programming assignments. The general pattern exists but must be individualized to plan the design, development, and implementation of programs to meet system specifications and user needs. This individualization requires analysis of data that is complicated. Analysis is breaking the problem or case into parts, examining these parts, and reaching conclusions that result in processes. This examination requires the application of known and established applications programming theory, principles, conceptual models, professional standards, and precedents in order to determine their relationship to the problem. For example, a position plans and determines programming procedures and work operations to be followed by others in order to conduct and complete programming activities timely and effectively. New processes or objectives require approval of higher management or the agency with authority and accountability for the program or system.

Complexity --The nature of, and need for, analysis and judgment is formulative, as described here. Positions evaluate the relevance and importance of applications programming theories, concepts, and principles in order to tailor them to develop a different approach or tactical plan to fit specific circumstances. While general policy, precedent, or non-specific practices exist, they are inadequate so they are relevant only through approximation or analogy. In conjunction with theories, concepts, and principles, positions use judgment and resourcefulness in tailoring the existing guidelines so they can be applied to particular circumstances and to deal with emergencies. For example, a position establishes operating guidelines for the completion of programming projects and assignments and evaluates the relevance of existing applications programming guidelines in order to prepare and tailor individual approaches to resolve specific programming development and/or maintenance issues.

Purpose of Contact --Regular work contacts with others outside the supervisory chain, regardless of the method of communication, are for the purpose of clarifying underlying rationale, intent, and motive by educating others on unfamiliar concepts and theories. This goes beyond what has been learned in training or repeating information that is available in another format. For example, a position clarifies the

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intent of applications program design features to systems personnel and users to promote their understanding and ensure programs operate effectively.

Line/Staff Authority --The direct field of influence the work of a position has on the organization is as a unit supervisor or senior authority. The unit supervisor is accountable, including signature authority, for actions and decisions that directly impact the pay, status, and tenure of three or more full-time equivalent positions. At least one of the subordinate positions must be in the same series or at a comparable level. The elements of formal supervision must include providing documentation to support recommended corrective and disciplinary actions, signing performance plans and appraisals, and resolving informal grievances. Positions start the hiring process, interview applicants, and recommend hire, promotion, or transfer.

OR

The senior authority is a top level individual contributor position who has an exceptional level of professional expertise in the applications programming area. To be at the senior level, a position has been delegated by management to function as a top level individual contributor which is an essential component of the work assignment and is recognized as such by both management and peers. Such a position directly influences management decisions by acting as an internal consultant and providing direction to management on any aspect or issue related to the applications programming area. Managers and others rely on a senior level position when making decisions regarding the development and formulation of policy and other guidelines; the direction of overall project objectives and activities; and/or the consideration and implementation of new state of the art technologies in the senior authority's area of expertise. Additionally, the delegated responsibility to function as a senior authority is in lieu of supervisory responsibilities and a position does not require supervision to be placed at this level.

For example, a senior level authority is involved in activities such as: functioning as a project manager by overseeing and directing all phases related to the applications programming aspects of multiple simultaneous and/or the most complex/diverse projects; designing logic patterns for a particular application and language; reviewing specifications for new systems and applications in order to develop the most effective application; and coordinating applications programming project activities to achieve objectives in a timely manner. Other senior authority level work includes: acting as a management resource/internal consultant by advising and guiding management on the effective design and/or operation of existing systems and new technologies under consideration or proposed for implementation; providing direction to management, in the position's area of expertise, by formulating and recommending policies and strategies that support overall organizational objectives; developing and recommending criteria for the use of new technology and methodologies to be used to oversee and complete projects; and implementing new state of the art technologies and methodologies to complete projects.

APPLICATIONS PROGRAMMING MANAGER   H2A6XX

CONCEPT OF CLASS

This class describes positions that manage the activities and operation of an organizational work unit. Work involves determining plans, and developing the budget, staffing patterns, work units, guidelines,

and processes to accomplish work in order to implement and achieve applications programming objectives. The Applications Programming Manager differs from the Applications Programmer IV on Decision Making, Complexity, and Line/Staff Authority.

FACTORS

Allocation must be based on meeting all of the four factors as described below.

Decision Making --The decisions regularly made are at the interpretive level, as described here. Within limits of the strategic master plan and allocated human and fiscal resources, choices involve determining tactical plans to achieve applications programming objectives established by the higher management (strategic) level. For example, a position establishes plans to ensure programming services and activities are carried out timely and cost effectively. This involves establishing what processes will be done, developing the budget, and developing the staffing patterns and work units in order to deploy staff. This level includes inventing and changing systems and guidelines that will be applied by others such as, guidelines that govern standards for applications program development and maintenance and for the delivery of programming services to users. By nature, this is the first level where positions are not bound by processes and operations in their own programs as a framework for decision making and there are novel or unique situations that cause uncertainties that must be addressed at this level. For example, a position develops and sets guidelines and operating policies and devises work processes pertaining to applications programming activities and the delivery of these services to users in order to reach objectives and ensure quality and production goals are met. Through deliberate analysis and experience with these unique situations, the manager determines the systems, guidelines, and programs for the future.

Complexity --The nature of, and need for, analysis and judgment is strategic, as described here. Positions develop guidelines to implement a program that maintains the agency's mission. Guidelines do not exist for most situations. In directive situations, positions use judgment and resourcefulness to interpret circumstances in a variety of situations and establish guidelines that direct how a departmental/agency program will be implemented. For example, a position develops and establishes policies that govern the activities of an applications programming operation by interpreting broad policy statements and directives.

Purpose of Contact --Regular work contacts with others outside the supervisory chain, regardless of the method of communication, are for the purpose of clarifying underlying rationale, intent, and motive by educating others on unfamiliar concepts and theories. This goes beyond what has been learned in training or repeating information that is available in another format. For example, a position clarifies the intent of applications program design features to systems personnel and users to promote their understanding and ensure programs operate effectively.

Line/Staff Authority --The direct field of influence the work of a position has on the organization is as a manager. However, some manager positions exercise supervisory authority at the unit supervisor level. A manager with unit supervision is accountable, including signature authority, for actions and decisions that directly impact the pay, status, and tenure of three or more full-time equivalent positions. At least one of the subordinate positions must be in the same series or at a comparable conceptual level.

The elements of formal supervision must include providing documentation to support recommended corrective and disciplinary actions, signing performance plans and appraisals, and resolving informal grievances. Positions start the hiring process, interview applicants, and recommend hire, promotion, or transfer.

Some manager positions are accountable for multiple units through direct supervision of at least two subordinate Unit Supervisors at least at the Applications Programmer IV or comparable level; and, has signature authority for actions and decisions that directly impact pay, status, and tenure. Elements of formal supervision must include providing documentation to support recommended corrective and disciplinary actions, second-level signature on performance plans and appraisals, and resolving informal grievances. Positions start the hiring process, interview applicants, and recommend hire, promotion, or transfer.

ENTRANCE REQUIREMENTS

Minimum entry requirements and general competencies for classes in this series are contained in the State of Colorado Department of Personnel web site.

For purposes of the Americans with Disabilities Act, the essential functions of specific positions are identified in the position description questionnaires and job analyses.

CLASS SERIES HISTORY

Revised 5/1/94 (CVC). Adjustment to class description in response to 9/1/93 system appeal decision.

Effective 9/1/93 (CVC). Job Evaluation System Revision project. Published as proposed 06/01/93.

Revised 07/01/79. Addition of option 4, nature of work, education and experience, substitution, allocation factors for A2750* Computer Programmer A, A2751* Computer Programmer B, and A2752* Computer Programmer C. Nature of work, education and experience, substitution for A2753* Senior Computer Programmer. Education and experience, substitution for A2754X Principle Computer Programmer and A2790X Computer Programming Manager.

Revised 06/01/76. Education and experience for A2753* Senior Computer Programmer.

Created 01/01/75. A2750* Computer Programmer A, A2751* Computer Programmer B, A2752* Computer Programmer C, A2753* Senior Computer Programmer, A2754X Principle Computer Programmer and A2790X Computer Programming Manager.

CLASS SERIES DESCRIPTION (Cont'd.)
APPLICATIONS PROGRAMMER
May 1, 1994

SUMMARY OF FACTOR RATINGS

Class Level	Decision Making	Complexity	Purpose of Contact	Line/Staff Authority
Applications Programmer Intern	na	na	na	na
Applications Programmer I	Operational	Patterned	Detect	Indiv. Contributor
Applications Programmer II	Process	Formulative	Detect	Indiv. Contributor
Applications Programmer III	Process	Formulative	Clarify	Work Leader or Staff Authority
Applications Programmer IV	Process	Formulative	Clarify	Unit Supervisor or Senior Authority
Applications Programming Mgr.	Interpretive	Strategic	Clarify	Unit Supervisor or Manager

ISSUING AUTHORITY: Colorado Department of Personnel/General Support Services